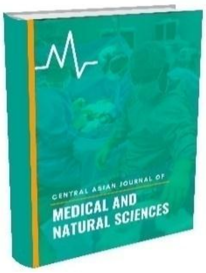
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A Method for the Prevention of Early Dislocation of the Endoprosthesis in Patients with II-III Degree of Dysplastic Coxarthrosis

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Abstract: Despite the significant progress made in recent years, in the development of hip arthroplasty, arthroplasty for dysplastic coxarthrosis remains a serious problem, in which the number of revisions, according to various authors, ranges from 32 to 58%. Complex deformity and defects of bone tissue in the area of installation of the acetabular component of the endoprosthesis are accompanied by a high risk of early instability and dislocation of the endoprosthesis, the frequency of which after endoprosthetics in patients with grade II-III dysplastic coxarthrosis ranges from 5 to 11%. The problem of dislocations after hip arthroplasty exists exactly as long as the arthroplasty itself.

Key words: Dysplastic coxarthrosis, dislocation of the endoprosthesis, posterior capsulotomy.

Relevance: Despite significant progress made in recent years, in the development of hip arthroplasty, arthroplasty for grade II-III dysplastic coxarthrosis remains a serious problem, in which the number of revisions, according to various authors, ranges from 32 to 58% [1.3.5.7.9.11]. Complex deformity and defects of bone tissue in the area of installation of the acetabular component of the endoprosthesis are accompanied by a high risk of early instability and dislocation of the endoprosthesis, the frequency of which after hip arthroplasty in dysplastic coxarthrosis ranges from 5 to 11% [2.4.6.8.10.12]. The problem of dislocations after hip arthroplasty exists exactly as long as the arthroplasty itself. If we assume that the era of modern endoprosthetics began in 1950–1960. from the works of G.K. McKee and J. Charnley, the dislocations, their causes and tactics of action were discussed in the very first reports on the experience of arthroplasty [13.15.17.19.21.23.25.27]. Many authors note that dislocations of the head of the eedoprosthesis in dysplastic coxarthrosis occur 3 times more than in aseptic necrosis of the femoral head and in 22.5–32% of cases are the reason for revision surgery [16.18.20.22.24.26.28]. Along with this, it should be noted that previously performed reconstructive operations for dysplasia are the cause of both instability of the endoprosthesis cup and an increase in the frequency of dislocations. Thus, the search for a technique for performing endoprosthetics surgery in dysplastic coxarthrosis that would reduce the risk of endoprosthesis dislocation in patients remains an urgent problem today.

Purpose of the work: to analyze the use of the posterior capsulotomy technique for the prevention of endoprosthesis dislocations in patients with grade II-III dysplastic coxarthrosis.

Materials and methods: Under our supervision in the department of orthopedics and the consequences of injuries of the Bukhara regional multidisciplinary medical center in the period from 2017 to 2020 there were 66 patients with dysplastic coxarthrosis II-III degree - 41 (52%) women and 25 (38%) men, who underwent total hip arthroplasty. Dysplastic coxarthrosis of the II degree was observed in 21 (32%) patients, III degree - in 45 (68%). In 42 (54%) cases, the posterior capsulotomy technique was used during the operation, mainly with a cementless type of fixation of the endoprosthesis components. Depending on the anatomical shape of the medullary canal of the femur, femoral components with metaphyseal, metaphyseal-diaphyseal or diaphyseal fixation were used; in 24 cases, a cement technique of endoprosthetics was performed, mainly in patients with osteoporosis [29.31.33.35.37.39.41.43]. A serious risk factor for postoperative early dislocation of the endoprosthesis was the tension of the joint capsule when the acetabular component was brought down to achieve the optimal center of rotation.

Evaluation of the results: We have evaluated the results of hip arthroplasty in grade II-III dysplastic coxarthrosis, taking into account the risk factors for dislocation of the endoprosthesis in this pathology, studied the features of the intraoperative tactics of the posterior capsulotomy aimed at preventing dislocation of the endoprosthesis. In the study group of patients with dysplastic coxarthrosis, female patients predominated, while at the age of over 50, pathology was noted in 32 (78%) patients, which we considered as an additional risk factor for endoprosthesis dislocation. In these cases, special attention was paid to a thorough assessment of anatomical, local data, neurological status, psychological readiness for the operation and individual preparation for the postoperative behavior of patients. When assessing the nature of previously performed operations on the hip joint, the anatomical state of the hip joint, the presence of a defect in the acetabulum, the volume of the defect in the anterior, superior, and posterior walls were assessed as predictors of the risk of dislocation of the endoprosthesis. The shape of the femoral head and the loss of its sphericity, as well as the cervico-diaphyseal relationship (valgus or varus position, degree of antetorsion or retrotorsion) were assessed. These factors must be taken into account at the stage of preoperative planning, since they affect the methods of arthroplasty[30.32.34.36.38.40.42.44].

Operation technique: After spinal anesthesia. We put the patient on his side. The limb is treated 3 times with a solution of iodine + alcohol. After that, we make a skin incision according to Harding 8-10 cm above the greater trochanter, dissect the fascia lata of the thigh along the entire length of the wound, and then subperiosteally separate the gluteus medius muscle from the greater trochanter. Then we dislocate the femoral head. Remove the femoral head with a saw. We process the acetabulum with cutters, after which we perform the excision of the posterior capsule. Next, we process the femoral canal. After that we install the components of the endoprosthesis. Intraoperatively, we check the presence of volume of movement. Next, we carry out hemostasis and wound closure. According to our data, posterior capsulotomy is a serious factor in the prevention of early dislocation of the endoprosthesis [45.46.47.48].

Because in patients with dysplastic coxarthrosis, the posterior capsule thickens over the years, losing its elasticity. In the system of preventive measures to reduce the risk and prevent dislocations during arthroplasty of patients with grade II-III dysplastic coxarthrosis, attention was paid to the preoperative preparation of patients, during which the nature of contracture in bilateral joint damage, the relationship with concomitant pathology of the spine and knee joints and their effect on possible risks of dislocation of the endoprosthesis in the postoperative period. In a number of cases, with severe atrophy of soft tissues at the preoperative stage, patients underwent rehabilitation treatment aimed at restoring muscle tone and increasing muscle mass in the hip joint by prescribing massage and

electrical muscle stimulation. In bilateral lesions of the hip joint in dysplastic coxarthrosis, the first to operate was the joint with more pronounced functional disorders and pain component, which were determined by the assessment of the pain threshold and visual analogue scale. Compensation for the shortening of the second, non-operated limb was carried out by fitting orthopedic shoes or heels on standard shoes [49.50.51].

The average interval between joint surgeries was 1 to 3 months. In the early postoperative period, to prevent dislocation of the endoprosthesis, all patients for the first 10 days were put on a plaster of paris on the operated limb and also used a differentiated tactic of restoring the function of the joint and mobility of patients, taking into account the postoperative assessment of the risks of dislocation. All patients who underwent posterior capsulotomy were recommended to bed rest for 1 to 2 weeks, while electrical stimulation of the thigh and lower leg muscles, isometric gymnastics, exercise therapy on arthroban 3 times a day, lymphatic drainage massage. In the interval between passive gymnastics on arthroban, the patients learned the skills of active exercise therapy for the hip joint. In the late postoperative period, the stability of the endoprosthesis components, the functional state of the joint, and aseptic instability were monitored. This tactic of managing patients after arthroplasty with dysplastic coxarthrosis allowed us to minimize the risks of dislocation of the endoprosthesis in the early stages after surgery. Analysis of immediate and long-term results showed that dislocations of the endoprosthesis after performing 66 hip arthroplasty in patients with dysplastic coxarthrosis occurred in 1 (1%) case due to non-compliance with the regimen.

Conclusions:

1. At the stage of preoperative planning of arthroplasty in patients with grade II-III dysplastic coxarthrosis, it is necessary to conduct a thorough analysis of all risk factors for dislocation of the endoprosthesis and take them into account when performing the operation.

2. Excision of the posterior capsule of the joint in patients with grade II-III dysplastic coxarthrosis during endoprosthetics and adherence to the postoperative rehabilitation regimen reduces the risk of postoperative dislocation of the endoprosthesis.

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